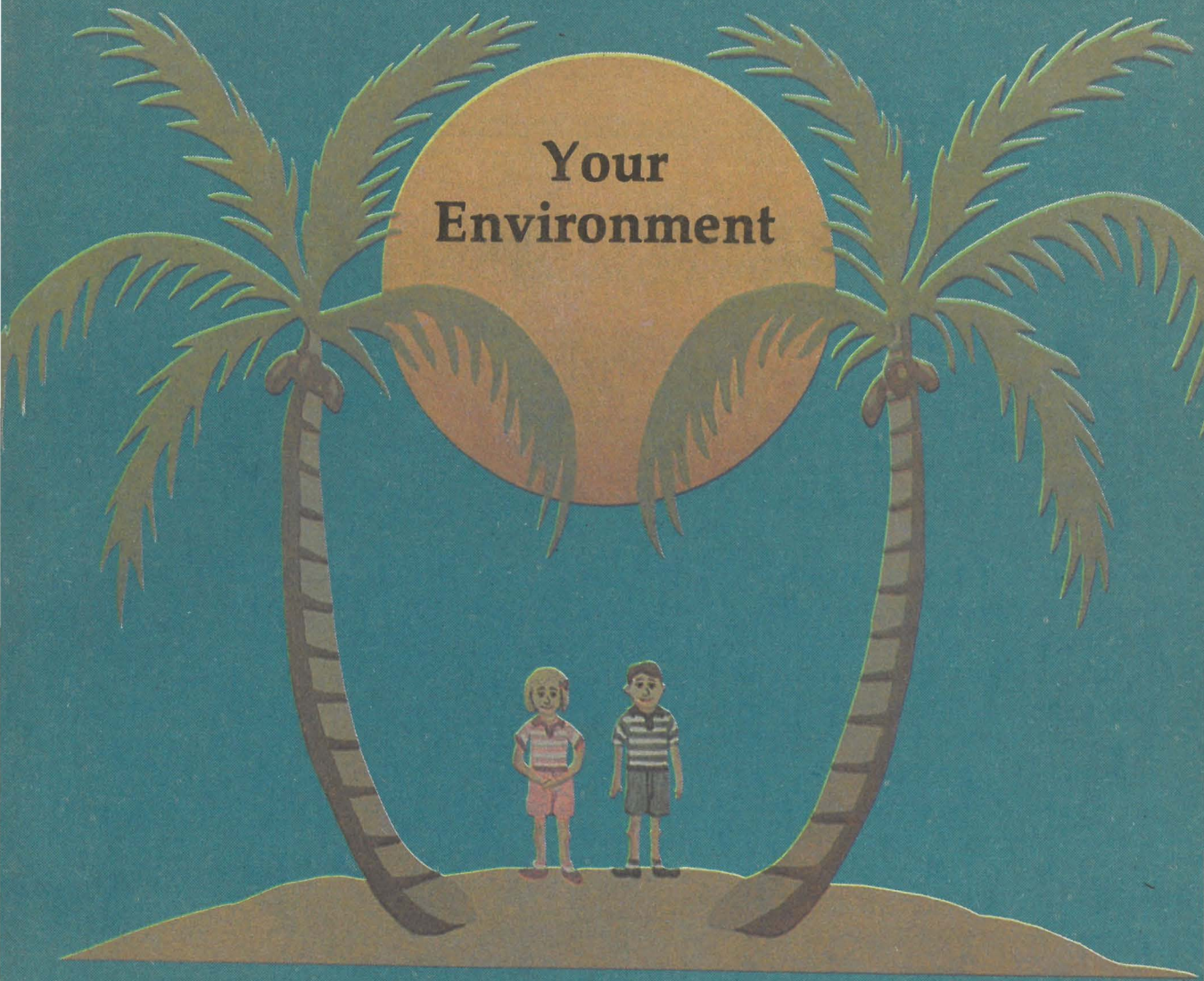
Your Environment

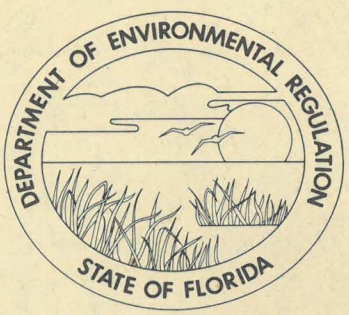


A guide for students

Florida Department of Environmental Regulation

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State Library of Florida

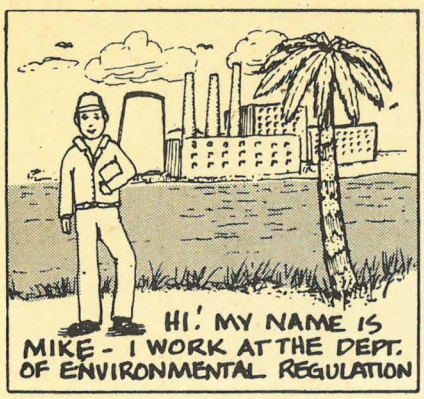


Headquarters Office

2600 Blair Stone Road
Tallahassee, FL 32301
Phone: 904-488-9334

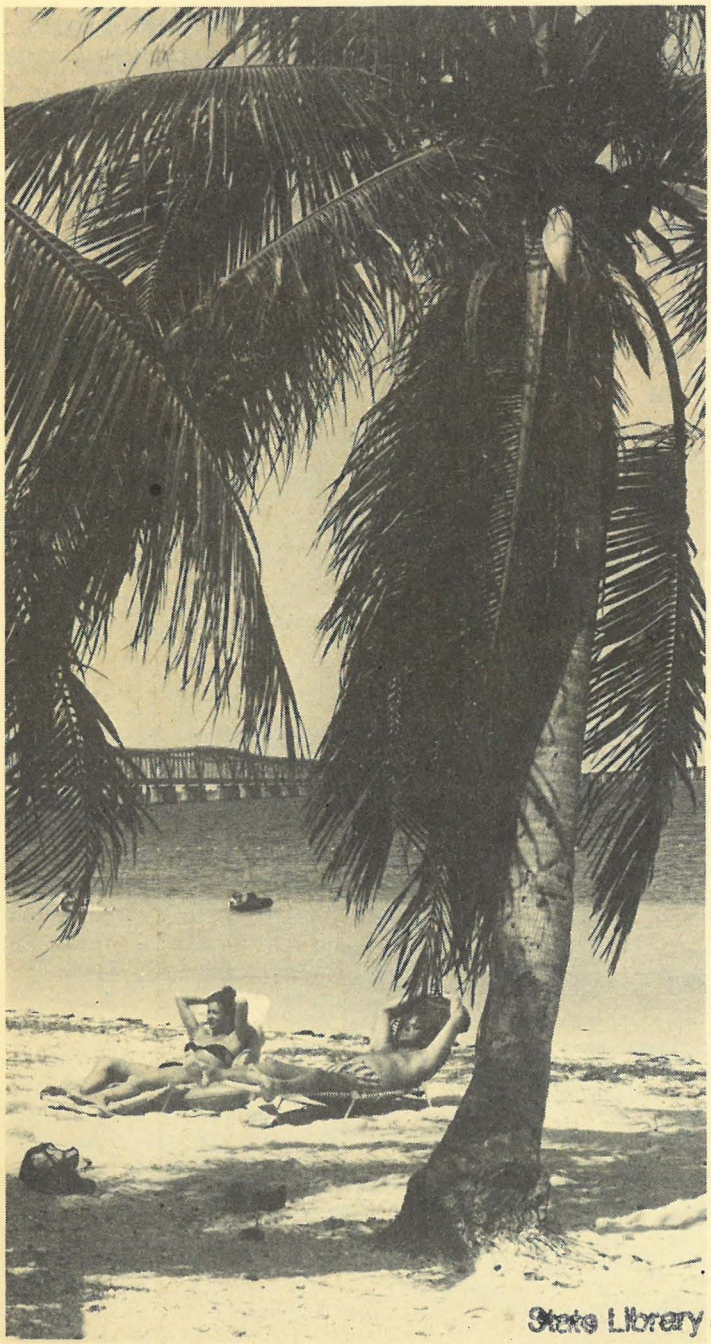
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Your Environment



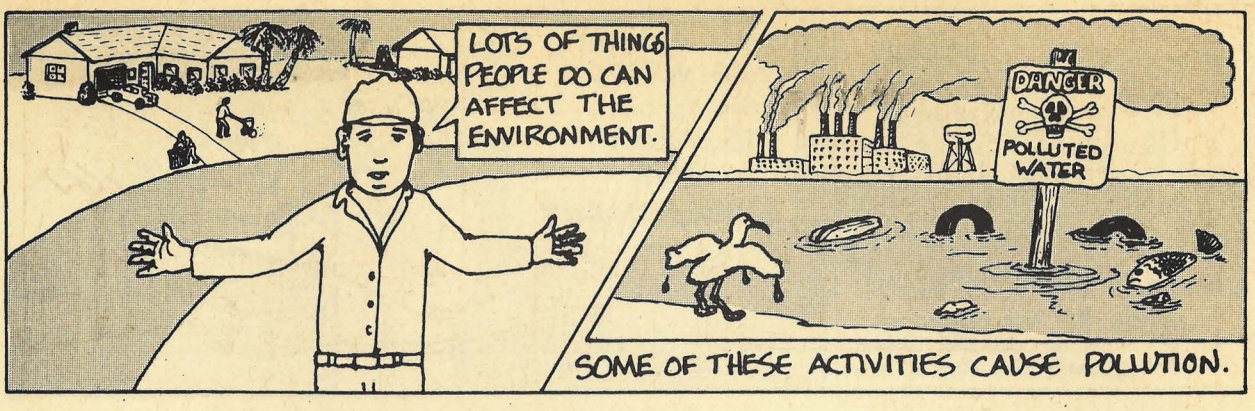
The environment is your surroundings—the city, countryside, and wilderness. Land, air, water, animals, plants and people are a part of it. Florida is fortunate to have a clean environment.

Florida's citizens need a clean environment to live, work and play. Our state's economy depends heavily on visitors who come to Florida for sunshine, clean air and water. Visitors, just like Florida's citizens, enjoy fishing, swimming, sailing, camping, and other outdoor activities.

Not only people depend on the environment. Wildlife also needs a place to live.

Florida's natural resources—our land, water, and air—must be used wisely and protected from abuse. We depend too much on our environment not to protect it.

State Library of Florida



Threats to Florida's Environment

Florida has a clean environment because the state is not heavily industrialized. However, in the last few decades the population has grown rapidly. When the Spanish explorers roamed Florida, there were only a few Florida Indians. Today, Florida's population is approaching 11 million. Development needed for the growing population changes the landscape. If these changes are not properly planned, problems like pollution can result.

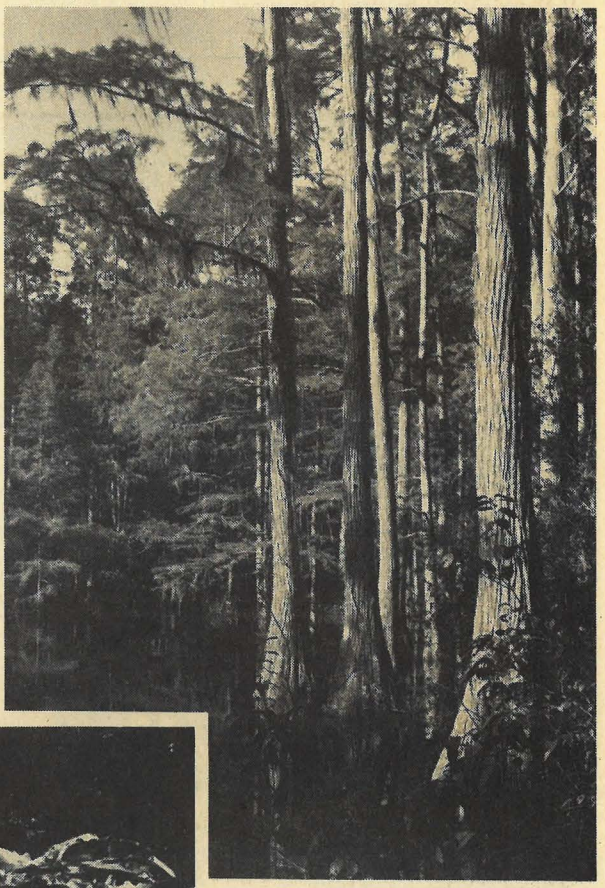
What is pollution?

☆ To a biologist, pollution is a change in the environment which affects the balance of nature.

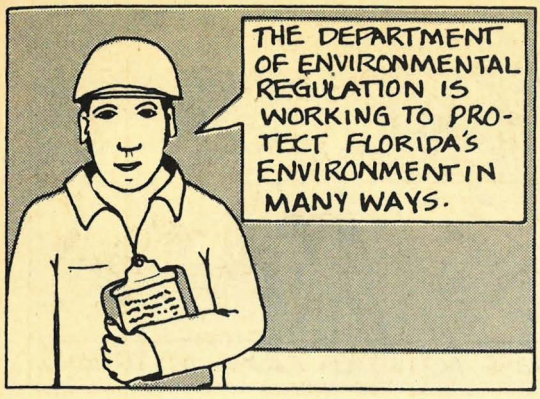
☆ To a doctor, pollution is a threat to public health from poisonous chemicals and diseases.

☆ But to most people, pollution is damage to the land, water and air which means a loss of their use.

Florida's government is working with industry and citizens to protect the environment. The Department of Environmental Regulation is involved in controlling pollution. With the combined efforts of government and citizens like you, we can use the natural resources of our state while protecting our land, water and air for future use.









Programs of the Department

The Florida Department of Environmental Regulation (DER) is the main environmental control agency in Florida. The DER has the overall goal to restore, maintain and improve the quality of our environment in Florida.

The Department of Environmental Regulation uses several methods to control pollution. All sources of pollution must get a permit from the department. These permits tell exactly what the pollution source can and cannot put into Florida's air and water.

If a polluter does not obey the permit, the department can take legal action. Polluters can go to jail or be fined up to $10,000 a day.

Department of Environmental Regulation programs for environmental protection include:

- **Water quality** programs make sure that we have clean water to meet our needs.
- **Water quantity** programs make sure we have *enough* water where we want it and when we want it, for a variety of purposes from irrigation to public water supply.
- **Drinking water** programs protect public health by having a safe water supply and treatment systems.
- **Air quality** programs keep air pollution under control and check on the quality of the air.
- **Power plant siting** makes sure we locate electric plants in the right places. Conflicts with the environment are settled before construction starts instead of after a project begins.
- **Enforcement** actions are taken by local offices of the Florida Department of Environmental Regulation when pollution laws are violated. The DER also works with other branches of the state and federal government as well as city and county pollution control organizations.



Water Pollution

Florida has many water resources. We have over 1200 miles of coastline, 13 major river basins, more than 8000 freshwater lakes, and underground water reserves called aquifers.

Florida's waters support a variety of fish and wildlife found nowhere else in the United States. Our water resources are valuable for their recreational value and beauty. Water has many uses including agriculture, industry, shipping, and public water supply.

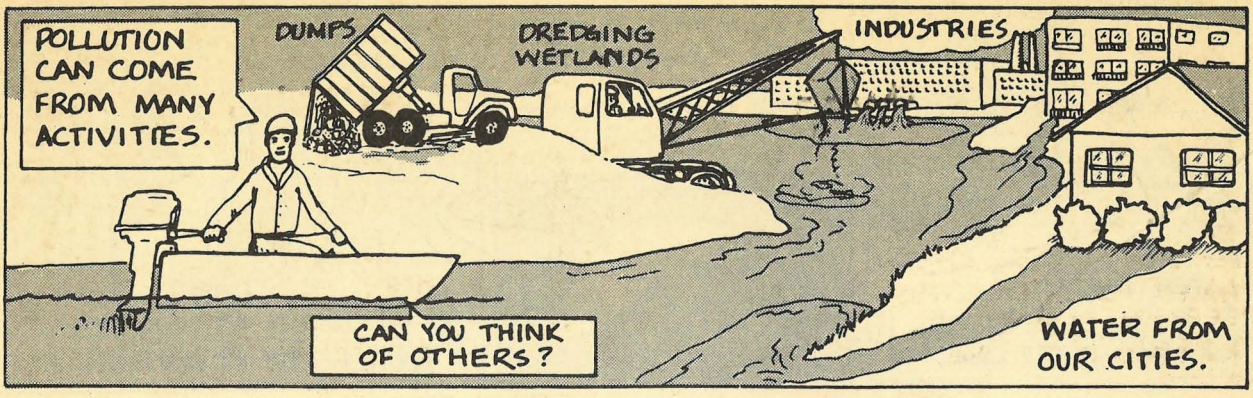
Since water is essential to life and has many valuable uses, it is important to keep our waters clean and usable.

Pollution threatens water quality and makes our waters unhealthy and unsafe to use. Water pollution can come from many sources including sewage, industrial waste, stormwater runoff, agricultural waste, thermal and radioactive wastes, and dredge and fill activities.

Industrial wastes can contain poisonous chemicals. They can kill plants, fish, and wildlife and also damage public health.

Florida's industries, such as citrus processing, phosphate mining and processing, pulp and paper mills, canning operations and meat processing, can contribute to water pollution if wastes are not properly treated.





Sewage is human and household wastes. It is collected and treated at sewage treatment plants and in home septic tanks. When improperly treated sewage gets into Florida's waters, it contributes to water pollution.

Improperly treated sewage can be dangerous to human health because it can carry disease-causing organisms. Along with the health hazards, improperly treated sewage can damage rivers and lakes. Sewage limits the amount of oxygen in water. If oxygen levels are too low, fish and other life in the water dies.

Septic tanks, when not working properly, can allow sewage to seep into Florida's underground water. Almost all of our drinking water is obtained from underground sources. If polluted, we could face shortages of drinking water.

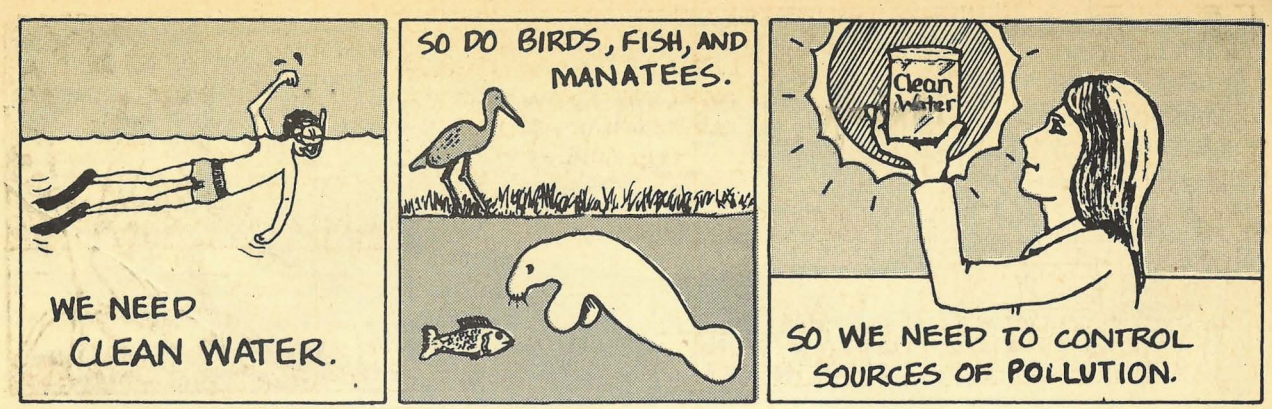


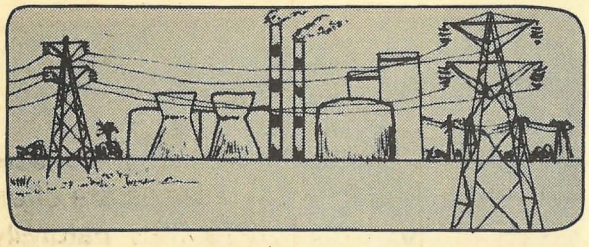
Stormwater runoff is more polluted than you might think. Consider all the different things that find their way onto the ground and streets: oil from cars, litter, fertilizer, pesticides, and animal wastes. These are only a few things that are washed away when it rains. Stormwater runoff is not pure, clean rainwater. It is very polluted.

Agricultural runoff carries away the wastes from livestock, the chemicals used in farming, and even the soil. When stormwater runoff from cities or farms enters our lakes and streams, the pollutants can damage water quality and upset the balance of nature.

The stormwater runoff from farms can be very polluted.





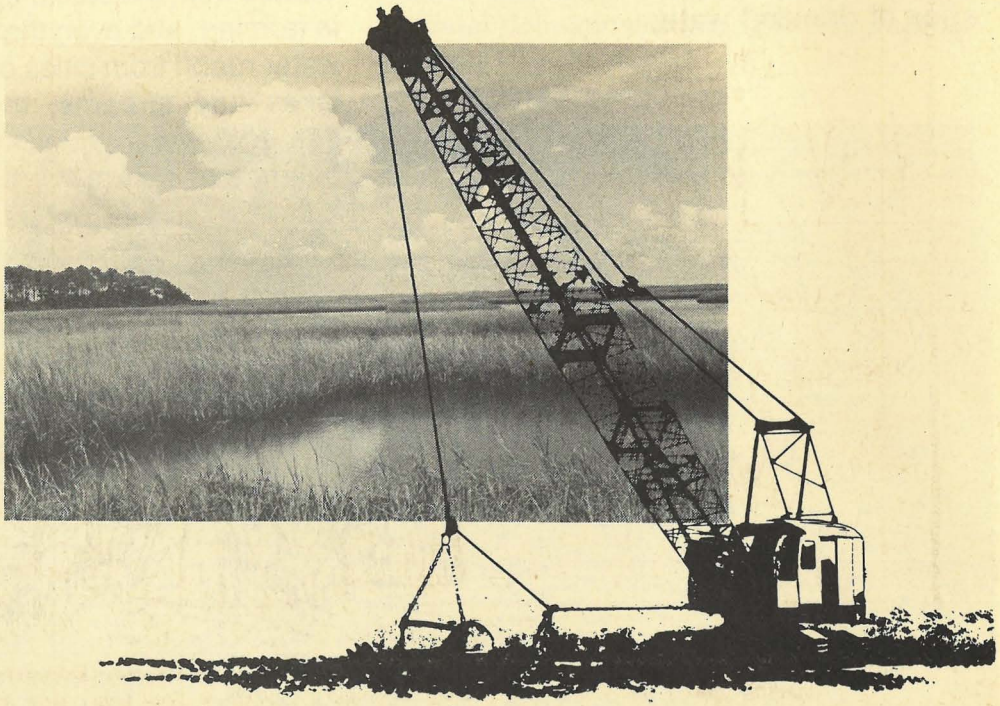


Thermal and radioactive wastes are usually related to power plants. Thermal pollution occurs when water used for cooling is returned to our waterways at a high temperature. Aquatic life dies if water temperatures are higher than normal.

Radioactive pollution of our waters is dangerous because nuclear materials are poisonous for hundreds and even thousands of years. If radioactive pollution occurs, the damage will remain for a long time.

Dredging and filling creates water pollution when wetlands are filled. Filling in swamps and marshes creates problems because wetlands are natural filtering systems which help keep our lakes, rivers, and bays clean. Wetlands are usually highly productive breeding areas for marine life and are valuable wildlife habitats. Dredging up material from the bottom of a body of water also suspends silt in the water and prevents sunlight from reaching marine life.

Florida has many water resources that are important for our recreation, economy, and public health. The only way our waters can continue to support life is for us to keep them clean and free from all types of pollution.

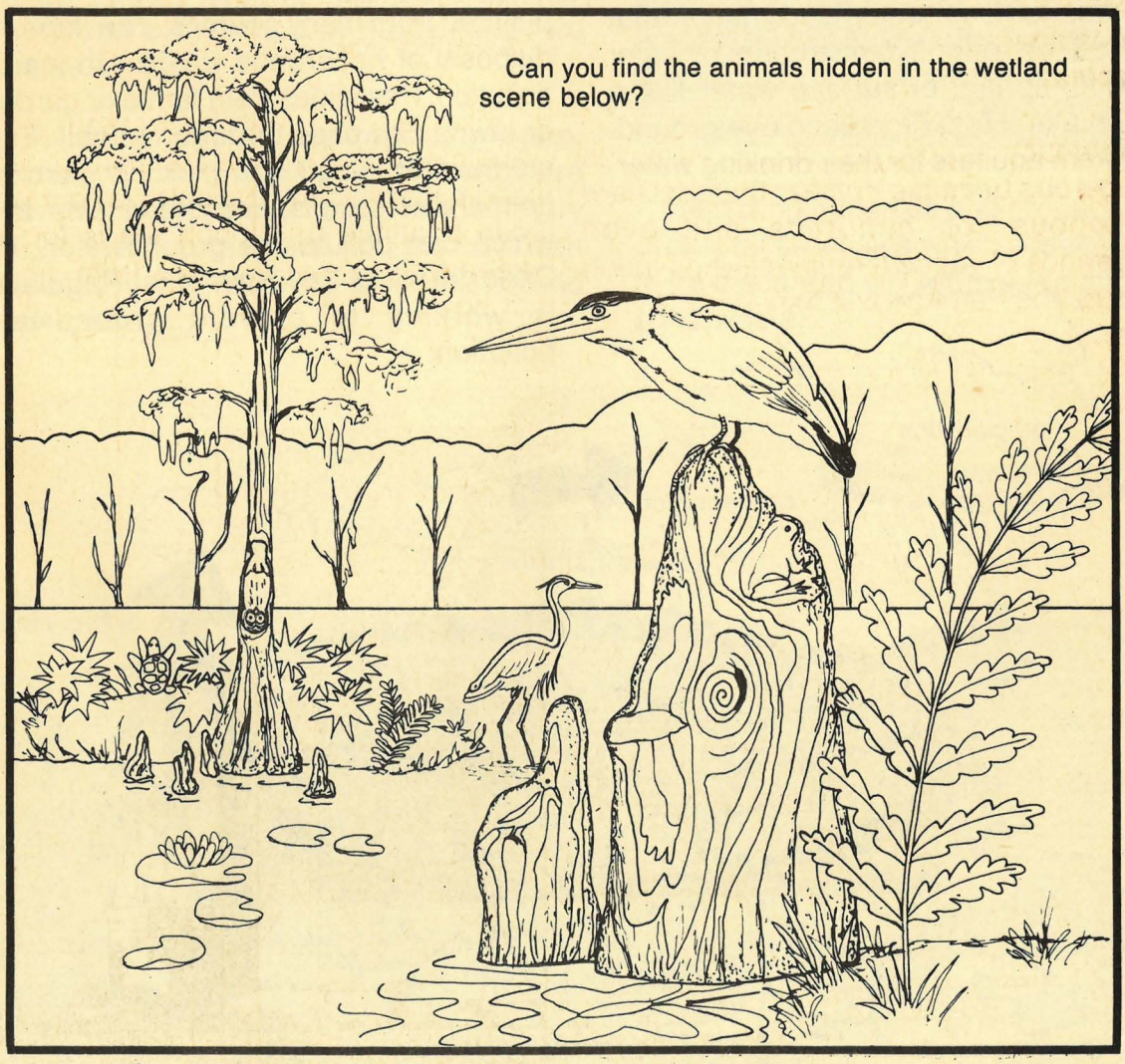




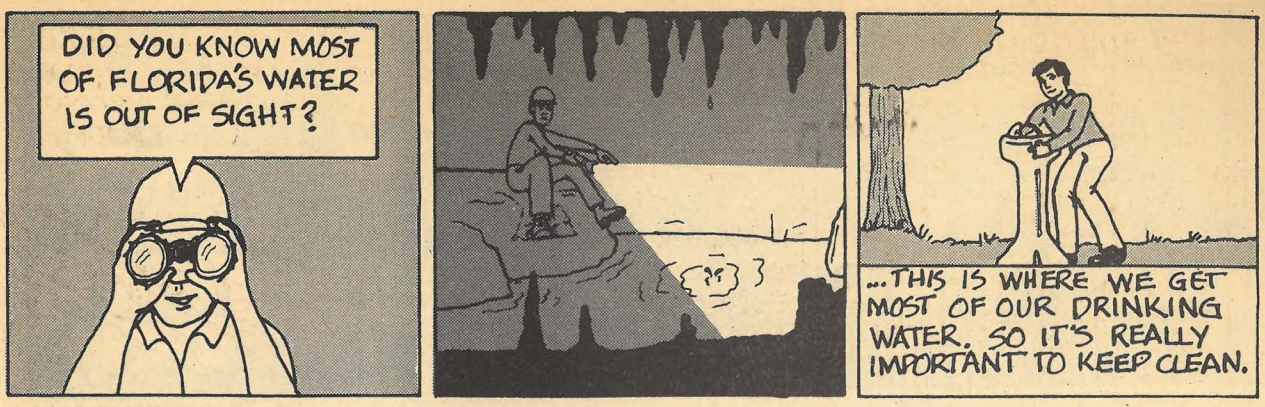
Wetlands

A wetland can be described as a natural community where the soil is saturated or covered with water for one or more months of the year. Coastal salt marshes, cypress swamps, and wet prairies are examples of different kinds of wetlands.

Coastal wetlands help lessen the effects of storms. Freshwater wetlands are often found along rivers where they naturally filter pollutants and help keep our waterways clean. Wetlands are also important because they store water and are important wildlife habitats.



Hawk, Snake, Snail, Fish, Otter, Frog, Kingfisher, White-tailed Deer, Turtle, Owl, Duck, Lizard, Butterfly



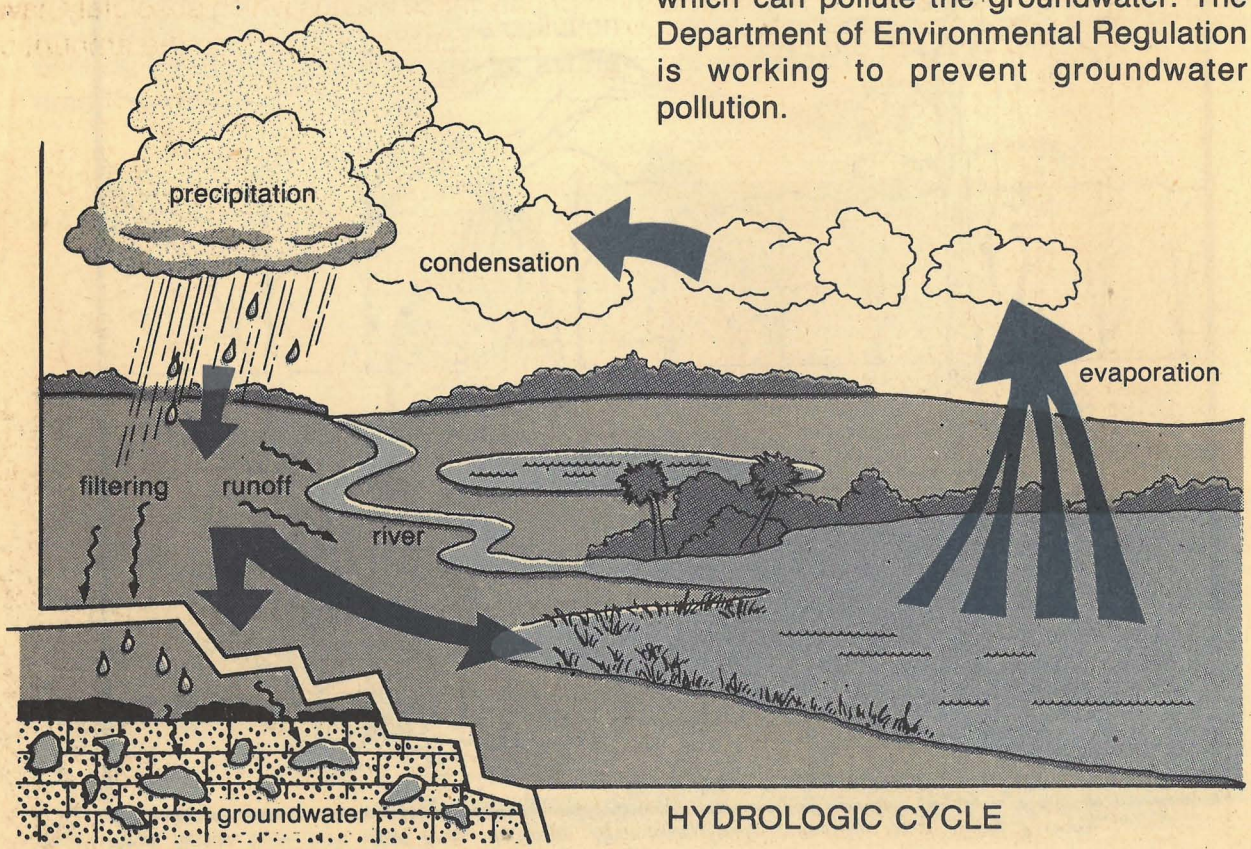
Groundwater

Beneath the surface of the earth, hidden from sight, is a vast underground water supply. It does not look like a lake, but instead it fills the tiny cracks and holes in the rock. This is called groundwater, and it is an important natural resource.

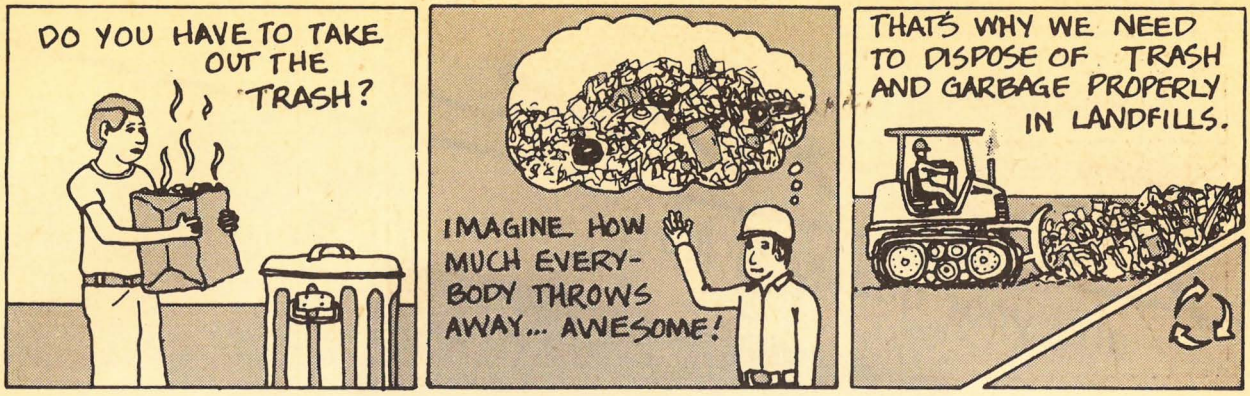
An aquifer is a geologic formation that can produce a significant amount of water to a well, spring, or surface water like a river or lake. Most Floridians use groundwater from aquifers for their drinking water.

As you can see from the drawing of the hydrologic cycle, groundwater begins as rain that slowly trickles down through the soil. These underground water supplies have built up over thousands of years.

Florida's groundwater can become polluted from many sources. The improper disposal of hazardous waste can lead to pollution. Pesticides from farms or gardens or lawns can pass through the soil. Even stormwater runoff can pick up gasoline, animal wastes, oils, and chemicals—all of which can pollute the groundwater. The Department of Environmental Regulation is working to prevent groundwater pollution.



HYDROLOGIC CYCLE



Solid and Hazardous Waste

Improper disposal of solid waste can damage the environment. In addition to household garbage and trash, solid wastes sometimes include materials that can poison the soil and seep into underground water supplies. Some chemicals remain poisonous for so long that future generations may be affected by the pollution we cause today.

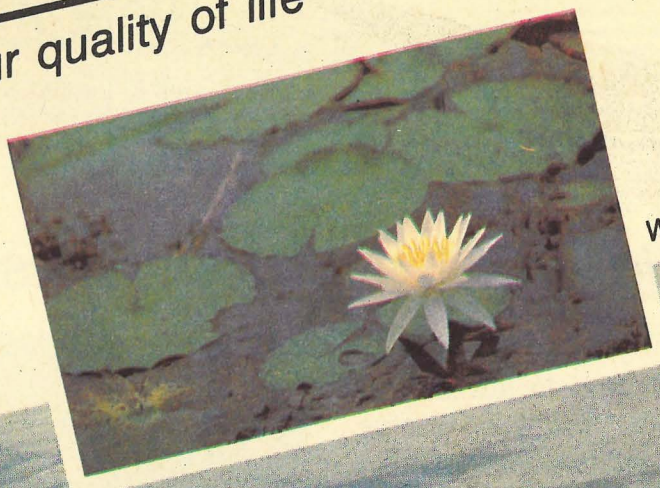
Sanitary landfills are replacing open, unhealthy dumps. Trash and garbage are covered by layers of earth in a sanitary landfill. When they are full, the land can be used for playgrounds, tennis courts and golf courses.



Recycling materials and proper disposal of only those wastes which absolutely have to be discarded will reduce the amount of solid waste.



Protecting Florida and your quality of life



Water Lilies

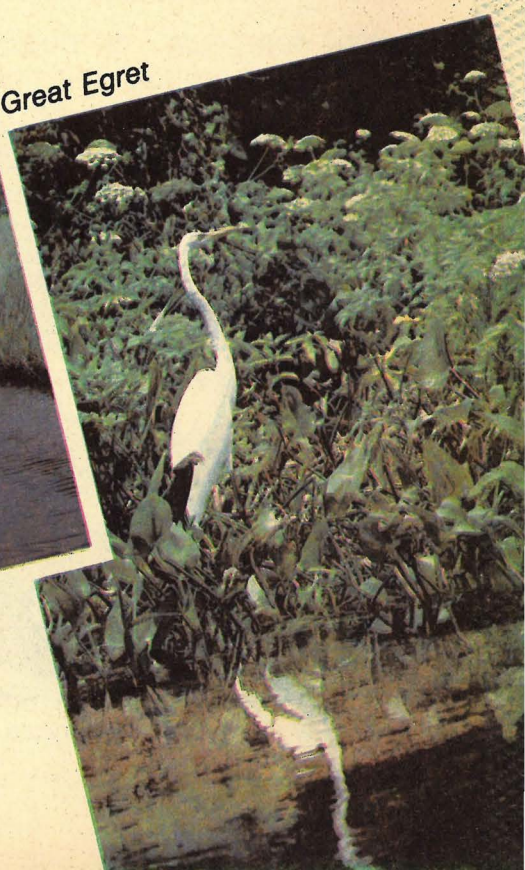
Florida's environment is beautiful, but fragile. From space, you can see the shape of Florida and the curve of the earth.



Everyone needs clean air.



Our water resources, including wetlands, are important to all Floridians.



Great Egret



Air Pollution

Air is all around us. We need it to live. An average person breathes about a cubic foot of air every minute. Your lungs filter out pollution in the air, but there is a limit to the amount of pollution your body can handle. If air becomes too polluted, it is a threat to public health, especially for people who have respiratory diseases like asthma, bronchitis, and emphysema.

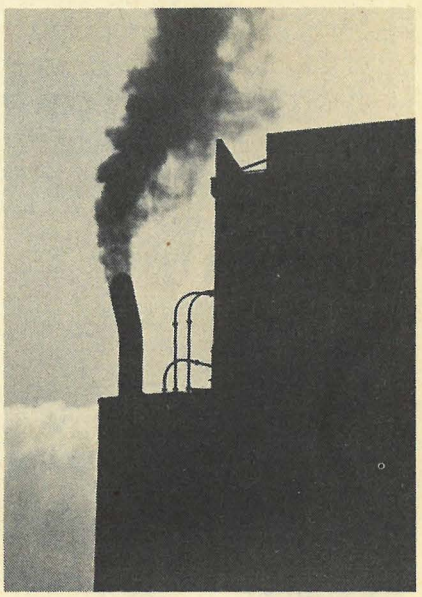
In Florida, even though our air is relatively clean, we have some pollution problems. Some sources of air pollution are agriculture, industry and transportation.

Agricultural activities such as processing and refining, open burning of sugar cane fields, or burning smudge pots and tires to prevent frost damage to crops can pollute the air. Improper use of chemicals and spraying pesticides into the air also contribute to the air pollution problem.

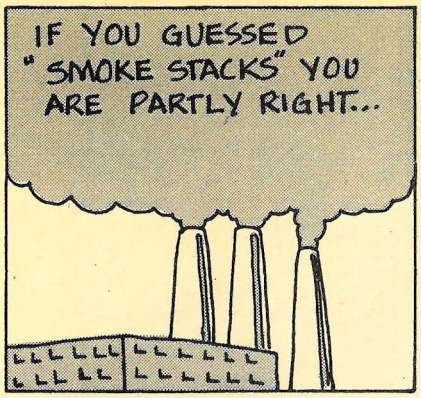
Industrial activities have special ways to control air pollution. Pulp and paper mills, asphalt and cement plants, refineries, and incinerators are among the many industries that must work to keep our air clean. For example, power plants must limit sulfur dioxide if they burn oil or coal that contains too much sulfur.

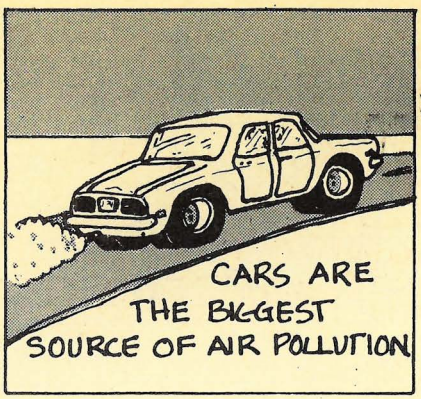


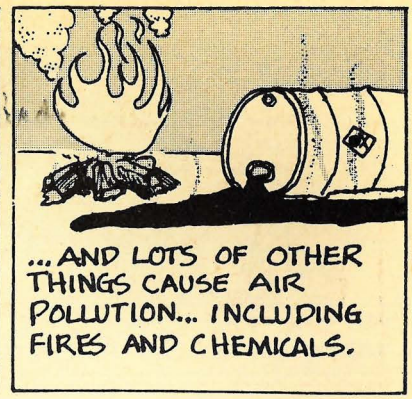
Burning sugar cane fields can pollute the air.



Many industries must limit their air pollution.







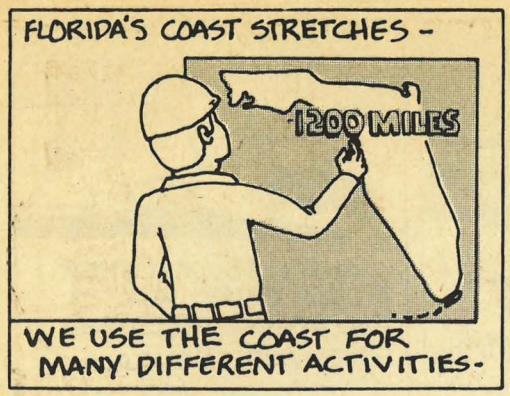


Transportation is the most difficult source of pollution to control. Cars, trucks, and planes are responsible for much of our air pollution. Automobiles are the largest source of carbon monoxide and nitrogen oxides. These chemicals are turned into smog by the sun through a process called photochemical reaction. If only one car were poorly tuned or did not have air pollution control equipment there would not be a problem. But think of the combined exhaust from all the cars and trucks in Florida.

Almost everything people do can cause air pollution. Driving cars or boats, working in a factory or on the farm, barbecuing, burning leaves, spraying chemicals, and even paint evaporating into the air contributes to air pollution.

In addition to man-made pollution, natural pollution can be part of our problem. Dust storms as far away as Texas or the Sahara Desert can affect our air quality in Florida. Dust can be carried great distances by the wind and high altitude air currents before it settles out and falls to the ground. Can the same thing happen with man-made pollution? Pollution can be carried from cities to the countryside or from state to state.

The United States Congress recognized air pollution as a national problem when it passed the Clean Air Act in 1972. The Act sets up goals for clean air across the nation. In Florida, state and local governments are helping protect air quality by enforcing pollution control laws and making plans to clean up the air according to the Clean Air Act.



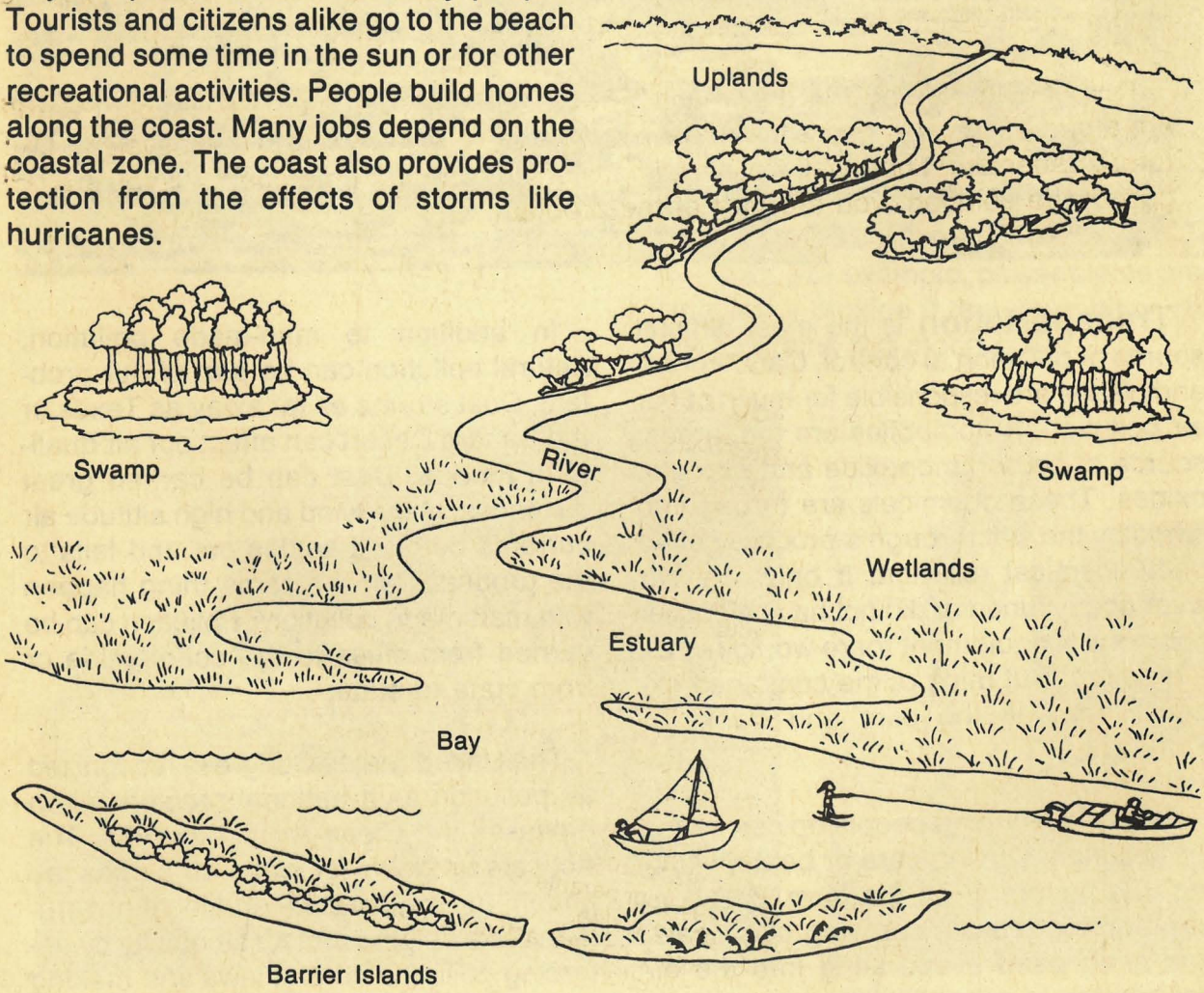


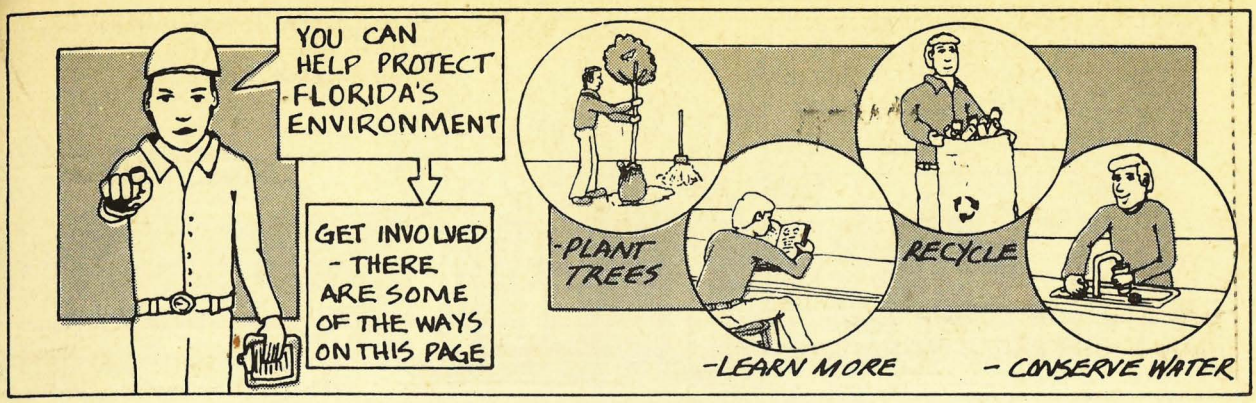
Color the Coast

Florida has over 1200 miles of coastline. But the coast is more than just a beach. It includes a broad area where the land meets the water.

The coast is important in a number of ways. It provides food for many people. Tourists and citizens alike go to the beach to spend some time in the sun or for other recreational activities. People build homes along the coast. Many jobs depend on the coastal zone. The coast also provides protection from the effects of storms like hurricanes.

You can see how important Florida's coast is. By working together, we can help protect and preserve our coastal resources.





Helping Florida's Environment

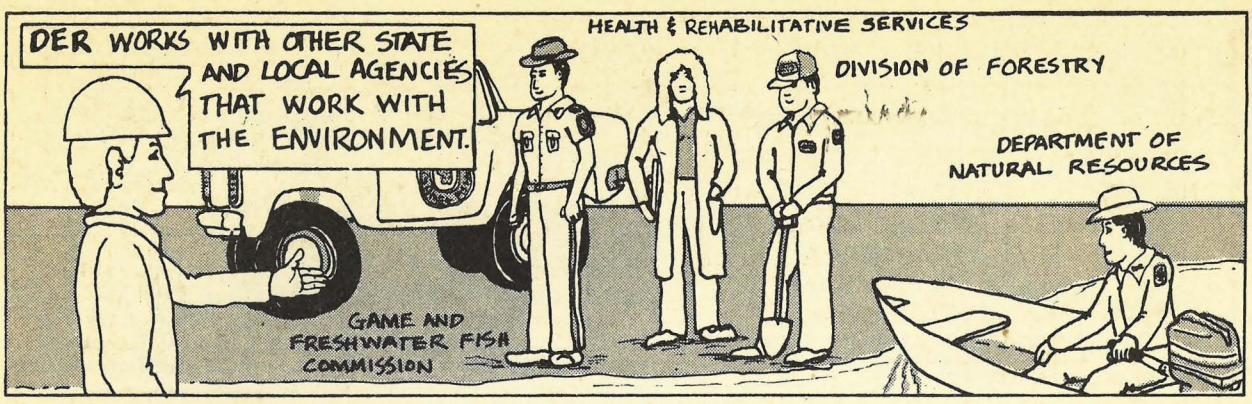
As a Florida citizen you can help protect our environment. If you think a clean environment is important to life, you will want to become involved in protecting it.

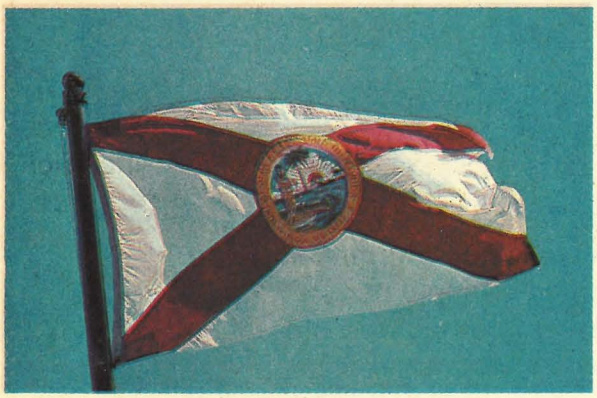
A good way to start is by contacting governmental agencies involved in the management and protection of our natural resources to get information about Florida's environment. Another way is to contact state and national conservation organizations. These groups are made up of private citizens like you who are concerned with the environment. Some have special programs for young people.

This booklet has shown that many things people do can cause pollution. People are a part of the environment and have a rightful place in the earth's ecosystem. Our future depends on how well we live *with* the environment. Remember..."if you are not part of the solution, you are part of the problem."

Things you can do to help the environment

- Find out about recycling in your community.
- Organize a litter clean up project.
- Study an environmental problem as a school project and then write a letter about your findings to the newspaper.
- Talk to your teacher and principal about setting up a recycling program at your school.
- Make an exhibit on air pollution using examples from your community.
- Organize a tour of your local water supply or sewage treatment plant for your class.
- Collect samples of water from lakes and streams for chemical testing in your school's science department. Compare the findings with water quality standards.
- Encourage your parents to reduce driving and car pool or share a ride.
- Do a report on the activities that can be restricted by pollution.





Florida's Government

A number of state agencies are involved in managing and protecting Florida's environment. These agencies are willing to help you with your concerns and will provide information upon request.

Department of Agriculture
Division of Forestry
3125 Conner Blvd.
Tallahassee, FL 32301
Protects and manages Florida's forests and woodlands. Issues permits for open burning.

Department of Commerce
Office of Information
Collins Bldg.
Tallahassee, FL 32304
Promotes Florida's environment for visitors and businesses.

Department of Education
Knott Bldg.
Tallahassee, FL 32301
Coordinates programs for teachers and students on environmental education.

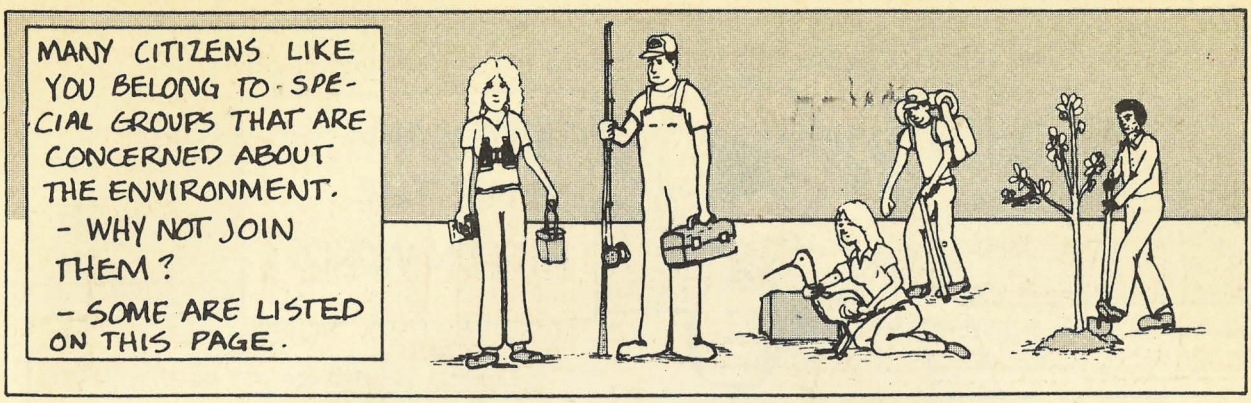
Department of Environmental Regulation
Office of Public and Legislative Affairs
2600 Blair Stone Rd.
Tallahassee, FL 32301
Administers programs to protect and manage Florida's environment. Enforces pollution control laws.

Game and Fresh Water Fish Commission
Information Services
Bryant Bldg.
Tallahassee, FL 32304
Protects and manages wildlife and freshwater fish resources. Reviews the biological effects of land and water use.

Office of the Governor
Energy Office
Bryant Bldg.
Tallahassee, FL 32304
Plans for the state's energy needs and promotes energy for conservation.

Department of Health and Rehabilitative Services
Public Information Office
1323 Winewood Blvd.
Tallahassee, FL 32301
Responsible for protecting public health; participates in drinking water testing program.

Department of Natural Resources
Education and Information Section
Marjory Stoneman Douglas Bldg.
Tallahassee, FL 32304
Administers programs for wise use and conservation of Florida's natural resources and state lands.



Florida's Citizen Organizations

Citizen organizations play an important part in protecting Florida's environment. They are made up of people who are willing to work for environmental legislation and decisions. Some of these organizations may have groups in your area. Some have special environmental education activities and programs for young people. Others distribute information about conservation issues. Write to find out more about their interests and activities.

Florida Audubon Society
1101 Audubon Way
Maitland, FL 32751

Florida Conservation Foundation
1203 Orange Ave.
Winter Park, FL 32789

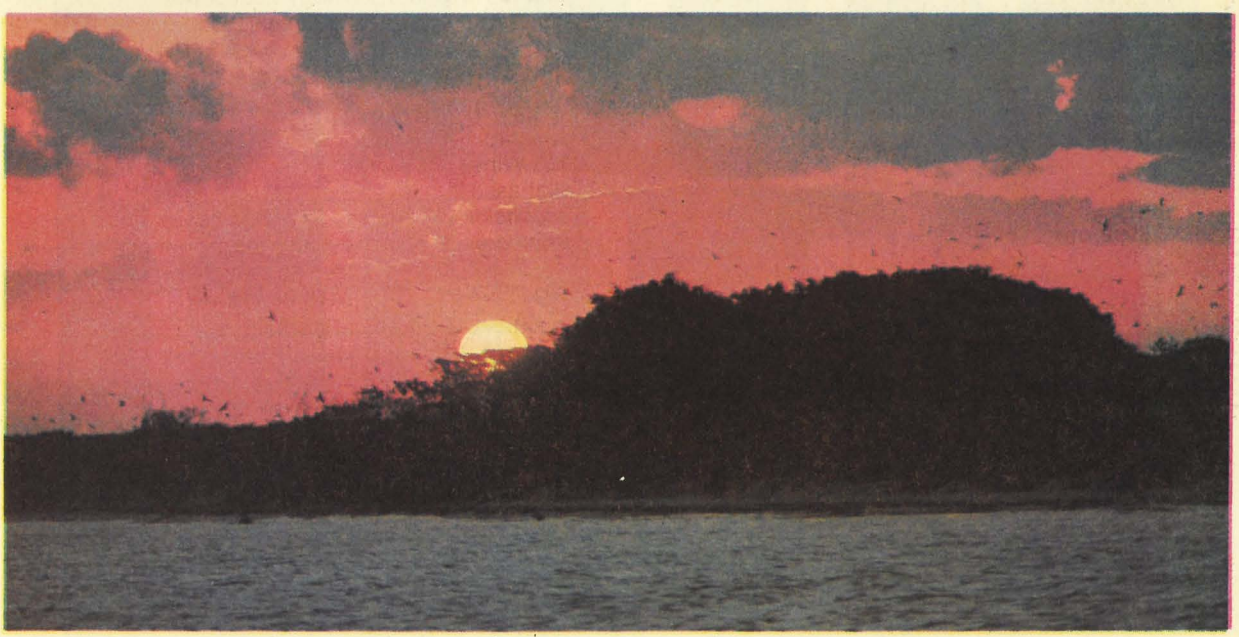
Sierra Club
Post Office Box 11248
Knoxville, TN 37919

The Nature Conservancy
Florida Chapter
1331 Palmetto Ave., Suite 205
Winter Park, FL 32789

Florida Defenders of the Environment
1523 N. W. 4th St.
Gainesville, FL 32601

Florida Wildlife Federation
4080 North Haverhill Road
West Palm Beach, FL 33407

These are a few Florida citizen organizations. Check with your local library for others.




CAN YOU FIND THE HIDDEN WORDS?



Environmental Crossword Puzzle

Across:

1. Your surroundings
2. Where an animal lives is called its _____ .
3. What we all breathe.
4. Pollution can sometimes seep through the _____ into underground water supplies.
5. All living things are part of an _____.
6. As a _____ of Florida, you can help protect our environment.
7. Much of Florida's drinking water comes from this source.
8. The wise use, without waste, of natural resources.
9. Rain that washes off the land into bodies of water is called _____ runoff.
10. Even household _____ often contains things that can pollute the environment.
11. People and wildlife can't live without ___ to drink.
12. _____ materials can stay poisonous for thousands of years.
13. If a polluter does not obey the permit, DER can take _____ action.
14. The Department of Environmental _____ helps control pollution.
15. One threat to wetlands is when we ___ and fill them.
16. Wetlands are valuable as homes for _____ .
17. If you throw gum and candy wrappers, soft drink cans, and papers on the ground, they become _____.
18. Something that damages the environment.
19. These swampy areas are important for storing water.

Down:

1. A clean environment is important to all things in _____.
2. Florida has 13 major _____.
3. Pollution is a ___ to our environment.
4. Chemicals in the air combine with sunlight to form _____.
5. It is important to everyone to have a _____ environment.
6. Animals like pelicans and manatees live along Florida's _____.
7. An ___ species is a plant or animal in danger of becoming extinct.
8. One example of _____ is returning aluminum cans to be reused.
9. All sources of pollution must get a _____ from DER.
10. Our planet
11. Human and household wastes
12. Underground formation containing water.
13. The trash you take out to the curb is buried in a sanitary _____.
14. _____ has many precious resources.
15. A number of agencies in state _____ help manage and protect Florida's environment.
16. Used to control insects.
17. Land, air, water, animals, and _____ are all part of the environment.
18. Wetlands are natural filtering systems which help keep ___, rivers, and bays clean.

Answers to the crossword puzzle can be found on the last page.

SEARCH FOR HIDDEN WORDS





Can you find 30 words hidden in this puzzle? The words all relate to the environment. They are found up and down, sideways, backwards and diagonally.

P O L L U T I O N R A E L C U N R S
P E S T I C I D E F I L D L I W B D
W G O M S W E T L A N D S W L P H W
Z N L N O I T A L U G E R X E K A C
T C T F J R G O V E R N M E N T Z T
D F N T H J T L F F O N U R E N A N
R P E R M I T A N I S V Y R B E R P
E R M A B N O I T A L U P O P M D S
C U N S C R B A H I L J C F P P O U
Y U O H E D V H K C B F L E M O U O
C X R V C R L A R U T A N E R L S N
L Q I B E R R Z H H P G H R S E P O
I R V S S T I B C F H L V T W V Y S
N B N E R B F A J T S E R O F E M I
G O E W A D E N E Z I T I C G D N O
C R S A C B W I L D E R N E S S R P
P Q M G L B D A L R R E F I U Q A E
D R A E X T I N C T E C R U O S E R

General Terms: environment, pollution, development, natural, wildlife, habitat, population, poisonous, extinct, resource; **Natural Resources:** wetlands, river, beach, forest, air, water, wilderness, aquifer, tree; **Pollution:** runoff, nuclear, hazardous, smog, pesticide, cars, trash; **What helps:** regulation, citizen, government, conservation, recycling, permit.



Glossary

Aquifer — Underground rock formations which hold water.

Conservation — Avoiding waste of, and when possible renewing, the human and natural resources of the world.

Dredging and filling — Digging up the bottom of a river, lake, stream or bay and using the dirt to fill in marshes and swamps.

Ecosystem — The entire system of living things as they relate to each other and their surroundings.

Pesticides — Chemicals that kill pests.

Recycling — Cleaning and reusing things that have already been used.

Resource — A person, thing or action needed for living or to make life better.

Smog — Eye-stinging haze that hangs over most cities and is produced when chemicals in the air mix with sunlight.

Stormwater runoff — Excess rainwater that drains off of the land into lakes and other bodies of water.

Answers to crossword puzzle

Across:

1. environment
2. habitat
3. air
4. soil
5. ecosystem
6. citizen
7. groundwater
8. conservation
9. stormwater
10. garbage
11. water
12. nuclear
13. legal
14. Regulation
15. dredge
16. wildlife
17. litter
18. pollution
19. wetlands

Down:

1. nature
2. rivers
3. threat
4. smog
5. clean
6. coast
7. endangered
8. recycling
9. permit
10. earth
11. sewage
12. aquifer
13. landfill
14. Florida
15. government
16. pesticide
17. plants
18. lakes

This public document was produced at a cost of $4755 or $0.24 a copy to inform and educate students about Florida's environment and programs to protect it.